CLAIMS

What is claimed is:

1. Method for digitally transmitting analog signals, in which oversampling is performed, comprising the following steps:

a) inputting an analog input signal into an analog/digital converter;

b) mixing of the analog input signal with a noise signal in a summing device;

c) quantizing the analog input signal mixed with the noise signal in a quantizing device, which provides a digital signal;

d) filtering the digital signal obtained in a decimation filter unit, which provides a digital transmission signal with a reduced bandwidth;

e) transmitting the digital transmission signal with the reduced bandwidth;

f) supplying the transmitted digital transmission signal to a mixing unit;

g) mixing the digital transmission signal with a receive noise signal in the mixing unit;

h) post-quantizing the digital transmission signal mixed with the receive noise signal in a post-quantizing unit which provides a post-quantized signal;

i) interpolating the post-quantized signal in an interpolation filter unit which provides an interpolated signal;

j) amplifying the interpolated signal in an amplifier unit which provides an amplifier output signal;

k) adapting the amplifier output signal in a second noise shaping device;

l) post-filtering the amplifier output signal adapted by the second noise shaping device in a post-filtering device; and

m) outputting an analog output signal out of the post-filtering device,

wherein the method comprises the further step:

n) performing a first noise shaping by means of a first noise shaping device, arranged between the analog/digital converter and the decimation filter, which is combined with a second noise shaping performed in the second noise shaping device, the first noise shaping performed in the first noise shaping device providing an allocation of noises in individual frequency bands.

2. Method for digitally transmitting analog signals according to claim 1, wherein a second-order comb filter is provided as decimation filter unit.

3. Method for digitally transmitting analog signals according to claim 1, wherein a first-order noise shaping device is provided as the first noise shaping device.

4. Method for digitally transmitting analog signals according to claim 1, wherein a first-order noise shaping device is provided as the second noise shaping device.

5. Method for digitally transmitting analog signals according to claim 1, wherein a second-order comb filter is provided as an interpolation filter unit.

6. Method for digitally transmitting analog signals according to claim 1, wherein a 10-bit current drive converter is provided as a digital/analog converter.

7. Method for digitally transmitting analog signals according to claim 1, wherein noise shaping is provided by an adaptive noise shaping device.

8. Device for digitally transmitting analog signals, comprising:

a) an analog/digital converter for inputting an analog input signal;

b) a summing device for mixing the analog input signal with a noise signal;

c) a quantizing device for quantizing the analog input signal mixed with the noise signal;

d) a decimation filter unit for filtering the digital signal obtained;

e) a mixing unit for inputting the transmitted digital transmission signal;

f) a post-quantizing unit for post quantizing the digital transmission signal mixed with the received noise signal;

g) an interpolation filter unit for interpolating the post-quantized signal;

h) an amplifier unit for amplifying the interpolated signal;

i) a second noise shaping device which is arranged in front of an digital/analog converter, for adapting the amplifier output signal; and

j) a post-filtering device for post-filtering the amplifier output signal adapted by the second noise shaping device,

wherein the device also comprises the following:

k) a first noise shaping device which is arranged between the analog/digital converter and the decimation filter, for performing first noise shaping which is combined with a second noise shaping performed in the second noise shaping device, the first noise shaping performed in the first noise shaping device providing an allocation of noises in individual frequency bands.